

[0070] WHAT IS CLAIMED IS:

1. A fault interrupter apparatus comprising:
first and second input terminals for connection to the line and neutral terminals, respectively, of a power source;
first and second output terminals for connection to the line and neutral terminals, respectively, of a load;
first and second conductive paths extending,
between said first and second input terminals and said first and second output terminals;
first and second contact sets for completing and interrupting said first and second conductive paths, respectively;
an actuator for operating said first and second contact sets; and
first and second electronic switching devices coupled to said actuator, said first electronic switching device being adapted to energize said actuator for a selected period of time, said second electronic switching device being adapted to energize said actuator after said first electronic switching device ceases operation.
2. A fault interrupter apparatus as claimed in claim 1, further comprising:
a fault sensing circuit adapted to produce a fault signal in response to an imbalance between current, flowing in said first and second conductive paths that is indicative of a ground fault condition at said load.
3. A fault interrupter apparatus as claimed in claim 1, wherein said actuator comprises a solenoid.
4. A fault interrupter apparatus as claimed in claim 1, wherein said second electronic switching device is energized in response to said first electronic switching device ceasing operation.

5. A fault interrupter apparatus as claimed in claim 1, wherein said first and second electronic switching devices comprise transistors.

6. A fault interrupter apparatus as claimed in claim 1, further comprising:

said controller coupled to said first and second electronic switching devices.

7. A fault interrupter apparatus comprising:

first and second input terminals for connection to the line and neutral terminals, respectively, of a power source;

first and second output terminals for connection to the line and neutral terminals, respectively, of a load;

first and second conductive paths extending, between said first and second input terminals and said first and second output terminals;

first and second contact sets for completing and interrupting said first and second conductive paths, respectively;

a fault sensing circuit adapted to produce a fault signal in response to the detection of a fault condition at said load; and

a processing device coupled to an output of said fault sensing circuit for receiving said fault signal and for operating said first and second contact sets to open said respective first and second conductive paths.

8. A fault interrupter apparatus as claimed in claim 7, wherein said fault sensing circuit detects an imbalance between the current in said first and second conductive paths.

9. A fault interrupter apparatus as claimed in claim 7, wherein said fault sensing circuit comprises a ground fault circuit interrupter chip.

10 A fault interrupter apparatus as claimed in claim 7, wherein said processing device comprises a microprocessor.

11. A fault interrupter apparatus comprising:
first and second input terminals for connection to the line and neutral terminals, respectively, of a power source;
first and second output terminals for connection to the line and neutral terminals, respectively, of a load;
first and second conductive paths extending,
between said first and second input terminals and said first and second output terminals;
first and second contact sets for completing and interrupting said first and second conductive paths, respectively; and
a processing device for operating said first and second contact sets in response to a plurality of input signals, wherein a single input of said processing device is adapted to receive more than one of said input signals.

12. A fault interrupter apparatus as claimed in claim 11, wherein one of said input signals comprises a test button signal.

13. A fault interrupter apparatus as claimed in claim 11, wherein one of said input signals comprises a line voltage signal.

14. A fault interrupter apparatus as claimed in claim 11, wherein one of said input signals comprises a fault signal.

15. A fault interrupter apparatus as claimed in claim 11, wherein one of said input signals comprises a load voltage signal.

16. A fault interrupter apparatus as claimed in claim 11, wherein said single input of said processing device receives a test button input signal and a line voltage signal.

17. A fault interrupter apparatus as claimed in claim 16, wherein the absence of said line voltage signal is interpreted by said processing device as said test button signal.

18. A fault interrupter apparatus comprising:
first and second input terminals for connection to the line and neutral terminals, respectively, of a power source;
first and second output terminals for connection to the line and neutral terminals, respectively, of a load;
first and second conductive paths extending, between said first and second input terminals and said first and second output terminals;
first and second contact sets for completing and interrupting said first and second conductive paths, respectively; and
a controller for operating said first and second contact sets in response to the detection of a fault condition at said load, said controller being operative to periodically open said first and second contact sets to monitor a voltage at said load to verify that said first and second contact sets have opened, and to re-close said first and second contact sets after a predetermined period of time after verifying that said first and second contact sets have re-closed, said predetermined period of time being extended by said controller if said first and second contact sets have not re-closed within said predetermined period of time.

19. A fault interrupter apparatus as claimed in claim 18, wherein said load comprises an inductive load.

20. A self-testing fault interrupter apparatus as claimed in claim 18, wherein said controller comprises a microprocessor.

21. A self-testing fault interrupter apparatus as claimed in claim 18, wherein said processing device produces an alarm indication if said contacts have not re-closed within a selected maximum extension of said pre-determined period of time.

22. A method for operating a fault interrupter apparatus having at least one set of contacts for interrupting the coupling of power to a load and an electrically driven actuator for operating said sets of contacts, said method comprising:

energizing said actuator with a first level of a drive current for a selected period of time to cause said contacts to move from one of an open state or a closed state to the opposite state; and

after said selected period of time, energizing said actuator with a second level of drive current less than said first level of said drive current to maintain said contacts in said opposite state.

23. A method for operating a fault interrupter apparatus having at least one set of contacts for interrupting power delivery to a load, said method comprising:

periodically opening said contacts to interrupt power delivery to said load;

monitoring a voltage at said load to verify that said contacts have opened;

re-closing said contacts after a pre-determined period of time after verifying that said contacts have opened; and

extending said pre-determined period of time if said contacts have not re-closed within said pre-determined period of time.

24. A method for operating a fault interrupter apparatus as claimed in claim 23, said method further comprising:

producing an alarm indication if said contacts have not re-closed within a selected maximum extension of said predetermined period of time.